

Interview Summary

Application No.

09/893,695

Applicant(s)

SMITH, ANDREW L.

Examiner

Michael P Nghiem

Art Unit

2863

All participants (applicant, applicant's representative, PTO personnel):

(1) Michael P Nghiem.

(3) _____.

(2) Sean Wooden.

(4) _____.

Date of Interview: 18 December 2003.

Type: a) ☐ Telephonic b) ☐ Video Conference

c) ☒ Personal [copy given to: 1) ☐ applicant 2) ☒ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.

If Yes, brief description: _____.

Claim(s) discussed: 1, 11 and 17.

Identification of prior art discussed: Guenther et al. (US 6,097,755).

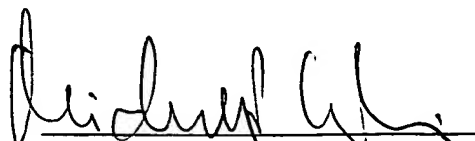
Agreement with respect to the claims f) ☒ was reached. g) ☐ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Objections to the specification are withdrawn in view of Fig. 3a. Applicants argue that the element (54) of Guenther is not a mixer for mixing received signals as recited in claim 1. Examiner withdraws current position regarding claim 1. The proposed amendments to claims 11 and 17, "... receiving a signal with pulse width relating to the length of the conductor under test" overcome Guenther. Examiner will conduct an update search.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.


Examiner's signature, if required

OUTLINE FOR INTERVIEW ON 12/18/2003

****FOR DISCUSSION PURPOSES ONLY****

I. Claim 1 “mixer” element –

The Office Action points to the pulse amplifier 54 in Guenther as a mixer and specifically to Fig. 9 as showing the pulse amplifier 54 receiving two signals. However, Guenther is quite clear as to the function of the pulse amplifier 54 as well as to the fact that it receives one signal. For example:

-Col. 6, lines 48-56: “The pulse shaper circuit generates *a current output* in response to the logical low pulse from pulsewidth generator 50...The pulse amplifier receives *the current signal* from the pulse shaper 52 and converts *the current signal to a voltage signal and amplifies it.*” (Emphasis added).

Clearly Guenther is describing the pulse amplifier as receiving a single signal (the current signal generated by the pulse shaper) and simply converting that to a voltage signal and amplifying. This is further emphasized by col. 6, lines 56-59, which state: “In the preferred embodiment the pulse amplifier 54 includes an operation amplifier configured as a current-to-voltage converter and a power booster stage to increase the signal level current to appropriate levels for interrogating the cable under test.” Simply, the pulse amplifier receives a current signal from the pulse shaper, converts it to voltage and boosts the converted signal to appropriate levels. There is nothing in the description of Figure 9 or anywhere else in Guenther that refutes or contradicts this description of the pulse shaper 52 and the single current signal it provides to the pulse amplifier 54

There is also no disclosure in Guenther that the pulse amplifier output contains two mixed signals, as put forth in the Office Action. The two wave forms shown in Fig. 6, and cited by the Office Action, simply show the different outputs produced when the pulse generator is operating (a) unipolar pulse output mode (unipolar pulse wave form above line in Fig. 6) and (b) bi-polar pulse output mode (bi-polar pulse wave form below line in Fig 6). These pulse wave forms, therefore, do not show the output of pulse

amplifier containing two mixed signals. Guenther describes the unipolar and bi-polar modes in detail in columns 6-8.

Further, Fig. 9 does not show that the pulse amplifier receives two signals from pulse shaper circuits 88 and 90. Foremost, as is clearly shown in Figure 9, the pulse amplifier 54 only has a single input. As it is impossible for the single input of pulse amplifier to carry two signals, the pulse amplifier 54 can only be receiving one signal. This is consistent with the description of the pulse shaper 52 and the single current signal it provides to the pulse amplifier 54 in col. 6 and referenced above. Moreover, col. 9, line 32-40, particularly lines 38-40, explain that pulse shaper circuits 88 and 90 generate a current signal output at different times: "It should also be noted that *either* PW1 *or* PW2 will be a logical high *at any one time* for generating an output from the pulsewidth generator 50." (Emphasis added). Since PW1 and PW2 drive pulse shaper circuits 88 and 90, clearly *either* pulse shaper circuit 88 *or* pulse shaper circuit 90 will generate an output *at any one time*. Therefore, pulse amplifier 54 does not receive two signals and is not a mixer.

II. Claim 11 "re-synchronizer" element

The Office Action points to the flip-flop 80 of Guenther as being a re-synchronizer and states that col. 9, lines 2-3 show the flip-flop "re-synchronize' the output." There is nothing in col. 9, lines 2-3 that is at all related to synchronizing, let alone re-synchronizing. As is well known in the art, a synchronizer synchronizes two signals; a re-synchronizer simply re-synchronizes two signals that were once synchronized or that are related to signals that were once synchronized. This is described in the present application, which describes the re-synchronizer as synchronizing the result "back in phase again with F1," see p. 12, col. 15 – p. 13, line 5, particularly p. 12, lines 18-19. Also see p. 17, lines 12-13. The flip-flop 80 is not described or illustrated anywhere in Guenther as synchronizing anything. It merely produces a signal that causes pulse wave shaper 88 to turn "on" (*i.e.*, produce a current signal output). Therefore, flip-flop 80 is not a re-synchronizer.

Further, it is unnecessary for claim 11 to recite the function of the re-synchronizer. One of ordinary skill in the art would clearly understand what a re-synchronizer is and that flip-flop 80 is not a re-synchronizer.

III. Voltage comparator of claim 11

The Office Action points to the processor 34 as being the voltage comparator of claim 11. The processor 34 is nowhere describe as being a voltage comparator or performing voltage comparisons. Therefore, the processor 34 is not a voltage comparator.

IV. Specification Objection

The Office Action states that the feature of the frequency generator circuit generating three frequencies is not described in the specification. Figure 3 of the original filed application clearly shows the frequency generator circuit, comprising F1 & F3 Generator (U3) and PLL Frequency Multiplier (U4) as generating three frequencies F1, F2 and F3. U3 generates F1 (also referred to as Fa) and F3 and transmits F3 to U4. U4 then generates F2 (also referred to as Fb). This is described on page 8, lines 10-22 of the specification. Therefore, this objection is overcome.

V. Proposed Amendments

If the Examiner agrees with the above, the Applicant agrees to discuss proposed amendments to clarify the claims and place the case in condition for allowance. For example:

Claim 11 (Proposed Amendment): A circuit for determining an indication of a length of a conductor, comprising:

- a terminal for connection to a conductor under test;
- a sample-hold latch, that receives a signal with a pulse-width related to the length of the conductor under test;
- a re-synchronizer, coupled to the sample-hold latch, that synchronizes an output of the sample-hold latch with a clock signal;
- a pulse source coupled to the sample-hold latch, the re-synchronizer, and the terminal; and
- a voltage comparator coupled to the pulse source and the terminal.

Claim 17 (Currently amended): A method for determining an indication of a length of a conductor, comprising:

- generating first and second frequency signals having a particular relationship;
- mixing signals related to the first and second frequency signals to produce an output signal; and
- applying a pulse edge, based upon the output signal, to a terminal for connection to a conductor under test, wherein a pulse width from the pulse edge is related to the length of the conductor under test.